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## Rule DAS055:      Performance characteristics of significant volumes

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**Finding:** CPExpert identifies the performance characteristics of the volumes in a system that have the most potential for performance improvement, **from the perspective of the “loved one” workload**.

**Impact:** This finding is used to assess the importance of the "worst" performing device from the perspective of the “loved one” workload, and to determine whether other devices offer significant performance improvement potential.

**Logic flow:** This is a basic finding. There are no predecessor rules.

**Discussion:** Rule DAS055 is similar to Rule DAS050, except that Rule DAS055 relates to devices accessed by “loved one” work. Please refer to Rule DAS050 for a discussion of the approach to selecting devices for analysis.

With Rule DAS055, CPExpert lists basic characteristics of the volumes having the most potential for improvement **from the perspective of the “loved one” workload**, so that you can appreciate the relative performance improvement potential between volumes on the list. The data presented by Rule DAS055 reflects the average per-second delays **only** during measurement intervals when the device I/O performance was worse than the average for its device type, **and** for measurement intervals when the device was referenced by the “loved one” workload. This information is presented on a system view basis.

The "weighted delays" value is a relative measure of the performance improvement potential of the volume. The absolute values in the column are not particularly meaningful. Rather, the values should be compared to each other to assess the relative performance impact of each volume.

It is possible that a volume may have a significant improvement potential in a particular measurement interval, but not be the volume with the most overall potential for improvement. This situation can arise because the analysis is directed toward the volumes with the **most overall** performance improvement potential. If you suspect that this is the case with a particular device, you can “select” that device for analysis, using the select process described in Section 3 of this document.

The following example illustrates the output from Rule DAS055 when a “loved one” workload was defined as BATCH:

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RULE DAS055: PERFORMANCE CHARACTERISTICS OF SIGNIFICANT VOLUMES

The following is a list of the most significant volumes accessed by BATCH showing their overall performance characteristics for the period being analyzed. The "average per second delays" represent the averages ONLY during measurement intervals when the device I/O performance was worse than the average for this device type. The "weighted delays" value is a measure of the overall relative performance impact of each volume.

VOLSER	DEVICE NUMBER	I/O RATE	-----AVERAGE PER RESP	SECOND CONN	DELAYS----- DISC	PEND	IOSQ	WEIGHTED DELAYS
WORKP2	2324	32.0	0.320	0.305	0.005	0.008	0.001	8631
MVSPX1	232E	21.2	0.036	0.029	0.002	0.005	0.000	64
MVSPL1	2537	73.5	0.132	0.107	0.005	0.016	0.004	59
MVS902	2137	47.5	0.045	0.031	0.002	0.011	0.001	58
PRD015	2538	38.5	0.037	0.024	0.004	0.009	0.000	51
PRD002	252D	16.5	0.016	0.011	0.002	0.003	0.000	50
PRD004	2536	10.8	0.015	0.011	0.001	0.003	0.000	38
PRD017	2635	73.8	0.061	0.042	0.003	0.016	0.000	32
PRD007	2133	10.5	0.011	0.007	0.002	0.002	0.000	32
WORKP3	2220	7.4	0.072	0.065	0.004	0.002	0.002	30
PRD005	2038	24.8	0.027	0.018	0.002	0.006	0.000	29

In this example, WORKP2 has significant performance improvement potential from the perspective of the BATCH workload<sup>1</sup>. The DASD Component would analyze WORKP2 as the "worst" device for the BATCH workload, to determine what caused the delays. Additionally, if the CPExpert modification to MXG or MICS (described in Section 2) had been installed, the DASD Component would list the applications referencing WORKP2. Further, if SMF Type 42 records were available (and the volume contained data sets managed by DFSMS), the DASD Component would produce Rule DAS400 to show access characteristics of the most significant data sets that resided on WORKP2.

**Suggestion:** You should use the information displayed by Rule DAS055 to assess the relative impact of the "worst" performing device compared with the performance improvement potential of the other devices, from the perspective of the "loved one" workload.

In some cases (as shown in the above example), the impact of the "worst" performing device will be several times the impact of the next performing device. In most cases, the impact of the top five or six devices will account for most of the overall impact.

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<sup>1</sup>The BATCH workload was selected simply as an example of Rule DAS055.